

Amendments to the Claims

The listing of claims below replaces all prior versions and listings of claims in the application:

1. (Currently amended) A vertical processor comprising:
 - an outer drum having an inner surface;
 - a plurality of ~~inner~~ containers positioned within the outer drum and adapted to be driven into engagement with the inner surface of the outer drum by centrifugal motion, each container having an open top;
 - a drive system for centrifugally driving the ~~inner~~ containers within the drum;
 - a lid adapted to removably engage with each container for closing the container; and
 - a lifting mechanism attached to each lid and adapted to lift the lid[[s]] off of the container.
2. (New) A vertical processor according to claim 1, wherein said lifting mechanism further comprises a lifting member that is rotatable with said drive system, is movable to lift the lid, and on which said lid is rotatably mounted for rotation with its associated container.
3. (New) A vertical processor according to claim 1, wherein the containers are rotatably mounted on bearing blocks and the bearing blocks are pivotably attached to a rotatable member of the drive system for pivoting about pivot axes tangential to an axis of rotation of the drive system.
4. (New) A vertical processor according to claim 3, wherein each container further comprises a traction surface for frictional engagement with the inner surface of the outer drum, and wherein a center of mass of said container is between said traction surface and said pivot axis of the bearing block.
5. (New) A vertical processor according to claim 3, wherein the lid of at least one container is pivotably connected to the bearing block.
6. (New) A vertical processor according to claim 5, wherein said lid is pivotably mounted at an upper end of said container and said pivot axis attaching said bearing block to said rotatable member is at a lower end of said container, further comprising a lift arm fixed relative to said bearing block and extending along said container and to which said lid is pivotably mounted.

7. (New) A vertical processor according to claim 1, wherein the lid of at least one container is pivotably mounted about an axis that lies radially inward of the container, relative to the drum, and is offset from a radial axis through the center of the pivotably mounted mass of the lid in a direction towards which the lid moves as the lid closes onto the container.

8. (New) A vertical processor according to claim 1, wherein the lifting mechanism comprises a linkage for opening and closing at least one lid, wherein the linkage comprises a resilient element that when the lid is closed exerts a force urging the lid to remain closed.

9. (New) A vertical processor according to claim 8, wherein the resilient element comprises a gas spring that when the lid is closed acts in compression along the length of the gas spring.

10. (New) A vertical processor according to claim 8, wherein the force the resilient element exerts when the lid is closed urges the container on which the lid is mounted outwards against the inner surface of the outer drum.

11. (New) A vertical processor according to claim 10, wherein when the lid is closed the linkage is angled radially and axially, with its radially outer end attached to the lid, and wherein the lifting mechanism moves the radially inner end of the linkage axially away from the lid to open the lid.

12. (New) A vertical processor according to claim 1, wherein the lifting mechanism further comprises a lift mount movable along the axis of the drum, rotatable with the drive system, and connected to the lids.

13. (New) A vertical processor according to claim 12, wherein the lids are pivotably mounted about axes radially inward of the lids, and the axial movement of the lift mount causes axial movement of outer parts of the lids.

14. (New) A vertical processor according to claim 12, wherein the lift mount further comprises a non-rotating, axially movable lift plate and a linear actuator arranged to move said lift plate axially, and wherein said lift plate is connected to said lift mount for relative rotation.

15. (New) A vertical processor according to claim 1, wherein said outer drum and said drive mechanism have a common substantially vertical axis.

16. (New) A vertical processor comprising:

an outer drum having an inner surface and a substantially vertical axis;

a plurality of containers positioned within the outer drum and adapted to be driven into engagement with the inner surface of the outer drum by centrifugal motion, each container having an open top and a traction surface for frictional engagement with the inner surface of the outer drum;

a drive system rotatable about the axis of the drum for centrifugally driving the containers to orbit within the drum such that the containers roll on the inner surface of the outer drum;

a plurality of bearing blocks pivotably attached at a lower end of the containers to a rotatable member of the drive system for pivoting about pivot axes tangential to an axis of rotation of the drive system, wherein the containers are rotatably mounted on the bearing blocks for rolling on the inner surface of the outer drum, wherein a center of mass of said container is between said traction surface and said pivot axis of the bearing block;

a lift arm fixed relative to each said bearing block and extending upward along said container;

a plurality of lids, each pivotably mounted to a said lift arm at an upper end of said container and adapted to removably engage with a respective container for closing the container; and

a lifting mechanism attached to said lids and adapted to lift the lids off of the containers, said lifting mechanism comprising:

a plurality of lifting members that are rotatable with said drive system, and on each of which a respective said lid is rotatably mounted for rolling rotation with its associated container, wherein said lids are pivotably mounted about axes that lie radially inward of the container, relative to the drum, and below a radial axis through the center of the pivotably mounted mass of the lid and lifting member;

a lift mount movable along the axis of the drum and rotatable with the drive system;

a plurality of linkages connecting the lift mount to the lifting members, wherein each linkage comprises a gas spring that when the lid is closed acts in compression along the length of the gas spring to urge the lid downwards and to urge the lid and the container downwards and outwards;

a non-rotating, axially movable lift plate connected to said lift mount for relative rotation; and

a linear actuator arranged to move said lift plate axially.